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GASEOUS FUEL MIXTURE

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2 Claims. (Cl. 48—197)

This invention relates to gaseous fuel mixtures particularly adapted when used with oxygen for the purpose of welding and heating metals, for the preheating of metals in cutting operations, for case hardening of metals, for metal spraying, for lead burning, for the working of hard glass and the like.

It has heretofore been proposed to provide a gaseous fuel for use in combination with oxygen for the purpose of cutting metals the said gaseous fuel comprising a mixture of a gas having a high ignition point and a low flame temperature such as artificial illuminating gas with the vapour of ether in substantially the proportion of about 200 cubic feet of such gas to the vapour evolved from about one to two pounds of ether under the same conditions of temperature and pressure. In such a gaseous fuel as aforesaid the vapour of ether may vary from 2.5% to 5% by volume of the mixture and the artificial illuminating gas varies from 95% to 97.5% by volume of the mixture.

The invention has for its object to provide a comparatively cheap and improved gaseous fuel mixture by using ordinary coal or natural gas which is readily obtainable to be used in a manner and for similar purposes as acetylene is used.

According to the invention, a gaseous fuel such as coal or natural gas is provided and comprises a gas of low calorific value such as coal or natural gas admixed with a small quantity of propane or butane or propane and butane and ether in not materially less than propane or butane or propane and butane one cubic foot or part to .375 cubic foot or part of ether in sufficient quantities to increase the calorific value of the coal or natural gas not materially less than 20%. The proportions of the mixture of propane or butane or propane and butane to the ether is from 1 to 1.75 of the propane or butane or propane and butane mixture to from .375 to .65 of ether. A sufficient quantity of propane or butane or propane and butane with ether in the proportions stated can be added to the coal or natural gas until the calorific value of the coal or natural gas mixture has been increased substantially from 20 to 25%.

It is the nature of the invention that when the gases are mixed in the proportions stated and in the quantities specified, the following results, when the mixture of fuel gas is burned in the presence of oxygen, are obtained:—the flame temperature of the gas is increased, the high ignition point of the coal or natural gas is lowered materially, and the propagation of the flame is substantially reduced.

The invention thus provides a cheap gaseous fuel which can be used in ordinary blow pipes and burners for practically all the purposes for which more expensive fuel gases such as acetylene and hydrogen are now used.

According to the invention, the action of the propane or butane or propane and butane and ether when admixed with the coal or natural gas in the proportions hereinbefore stated and claimed permits a material saving in time and in oxygen for a given work as compared to the untreated raw coal or natural gas.

The invention contemplates the use of ordinary or commercial propane and butane. Small traces of propylene, pentane, or hexane or mixtures of any of them may be present in the mixture. While ordinary commercial or ethyl ether is preferred, methyl or synthetic ether or mixtures of any of these may be used.

For the purposes contemplated in this invention, the coal or natural gas may be delivered in pipes to the blow pipe under sufficient pressure to the nozzle according to the nature of the work to be performed. The propane or butane or propane and butane and ether mixture may be mixed for convenience in cylinders which are joined to the coal or natural gas supply prior to the burning with oxygen at the end of the nozzle or burner. A measuring or proportioning device of the usual type controls the proportions admixed with the coal or natural gas. The propane or butane or propane and butane and ether may be separately introduced or admixed with the coal or natural gas in a like manner.

The following is given as an example of the lower range or 20% increase on the assumption that one cubic foot of coal or natural gas equals 500 British thermal units per cubic foot:

Then 1 cubic foot propane-butane mixture	2,500 B. t. u.
.375 cubic foot ether	1,200 B. t. u.
Total	3,700 B. t. u.

Example of a mixture of the lower range:

	Cubic feet
Coal or natural gas	37
Propane or propane and butane	1
Ether	.375

As regards the higher range of 25% increase the following example may be quoted:

	Cubic feet
Coal or natural gas	64.55
Propane and butane	1.75
Ether	.65

A mixture as hereinbefore described in accordance with the present invention eliminates the difficulty encountered in the prior art aforesaid wherein ether and coal or natural gas are used in admixture because ether used directly with coal or natural gas vapourises only at high temperatures and flows in streaks with the coal or natural gas thereby delivering a flame of varying and uncertain intensity. The addition of propane or butane or propane and butane results in a constant flow of the gases in the proportions hereinbefore stated and also results in a constant and dependable intensity of the flame without variation thereof.

It has been ascertained that lesser proportions than contemplated by this invention are ineffective while larger proportions than the maximum specified herein provide no additional advantages.

What I claim is:

1. A gaseous fuel to be used with oxygen in a blow pipe, comprising a gas of low calorific value of the group consisting of coal gas, natural gas, and illuminating gas, admixed with propane and ether in substantially the following proportions: one part of propane to .375 part of ether and in quantity to increase the calorific value of the gas to not materially less than 20%.

2. A gaseous fuel as defined in claim 1, wherein the described proportional mixture is utilized in part to increase the calorific value of the illuminating gas.

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